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# Kikuyu Renovation Points for Tyne Cultivators

By A. L. HAMILTON, Dairy Instructor.

**F**ARMERS throughout the South-West have been faced with the problem of finding a method for renovating paddocks which have been established with kikuyu grass and paspalum over a long period. Both these grasses tend to produce a dense root-bound turf of varying depth which is very difficult to manage with conventional implements. If incompletely grazed, particularly during spring and early summer, kikuyu will form a dense spongy mass as much as three to four inches deep above the ground which effectively prevents the growth of all other species and considerably reduces the vigour of the grass.

Marked success in maintaining kikuyu pastures in vigorous condition has been obtained over many years on J. A. & S. V. Nilsson's property at Margaret River with the use of a small combine.

This machine was originally purchased for sowing oats and pasture seeds, and in order to increase its usefulness it was fitted with a set of "tickler" points, which are hard steel points approximately  $\frac{1}{4}$  in. in width. Adapted in this way the machine proved a valuable asset in maintaining an open and aerated condition in the kikuyu sward without leaving the surface in an unduly rough condition. An additional advantage with this type of machine is its ability to sow ryegrass, clover seeds, and fertiliser into the soil at the time of renovation.

Other methods which have been used in the past, are:—

- (a) Burning to remove some of the fibrous cover and produce a fresh growth. This practice is dangerous as the fire is difficult to control and can smoulder for days to burst into flame again with a hot atmosphere and freshening wind. In addition organic matter valuable to plant life is lost in the burn.
- (b) Renovation with rotary tyne cultivators such as the "Sunprong."
- (c) Rotary hoeing to a depth of 2 to 3 in.

- (d) Ploughing and working down with discs across the ploughing.

Disc cultivators, even when heavily weighted, will not cut through a heavy mat, and have the additional disadvantage that they cultivate too deeply on portions of the paddock where kikuyu or paspalum is thin.

Renovation with some of the implements mentioned above requires a more powerful tractor than most farmers have at their disposal and perhaps one of the biggest drawbacks is the fact that the paddock is often left in a very rough condition as the root-bound clods which are brought to the surface are difficult to break down. It is for this reason that many farmers are loth to attempt rejuvenation of these paddocks in which kikuyu has been growing unchecked for perhaps over thirty years.

## TILLER POINTS ADAPTED

An adaptation to a tiller point which has been developed in the Busselton district by Mr. T. George of Messrs. Nicholls and Phelps of Busselton appears to offer the best method of renovating these kikuyu and paspalum areas.

The standard tiller points which are used for cultivation are two inches wide, and the power required to pull a nine-tyne tiller through a heavy kikuyu or paspalum sward is considerable. It has also been found that large turfs are pulled up as the points



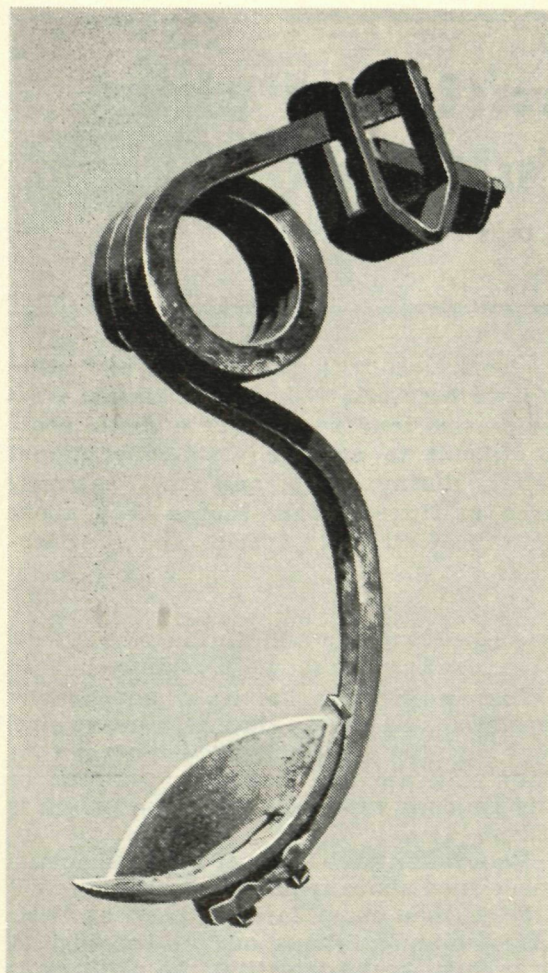


Fig. 1

reach the soil under the grass mat and the broad point tends to lift as well as tear through the sward.

In order to overcome this difficulty a steel plate was welded at right angles to the centre line on the standard point and the leading edge of the plate was sharpened to act as a knife or "fixed couler" to slice through the turf. Two different points were developed as illustrated in the accompanying photographs.

Fig. 1. shows a point in which the couler comprises a section of  $\frac{1}{8}$  in. steel cut from a circular saw fitted to a tyne used on a "curly tyne" type of tiller.

In Fig. 2. the couler is  $\frac{3}{8}$  in. steel, the point of which is carried beyond the standard fitting by approximately three inches.

It is fitted to a tyne of the six-foot Ferguson tiller which incorporates spring tension on the tynes.

These points when used on either type of tiller have the effect of slicing a track through the turf to allow the passage of the broad section of the point without unduly disturbing the grass on the surface. The soil underneath is shaken up by the 2 in. wide tyne to a distance of 2 to 3 in. on either side of the cut, thus providing good aeration.

### SPACINGS

The spacing of the tynes on the tool-bar of the machines in this area which have been fitted with these points has been maintained at approximately 9 in., thus a little under two-thirds of the soil is shaken up and a little over one-third is left undisturbed. The proportion of the soil which is shaken up could be increased by crossing with the implement but when this is carried out there is a tendency for 9 in. square clods to be torn up on the second run at right angles to the first. A better method of accomplishing a more drastic treatment would be to close the spacings in to say 7 in. and cultivate in one direction only. This would have the effect of reducing the width of the run but it is not feasible to add further tynes than stated below as the draft would be considerably increased and a more powerful tractor would be required.

### POWER REQUIREMENTS

In order to indicate the power required it could be stated that an early model Ferguson (TE 20) could successfully pull five tynes at 9 in. spacing giving a 3 ft. cut, and the FE 35 model could pull a total of nine tynes in two banks of five and four giving a six-foot cut at 9 in. spacing.

### TIME OF RENOVATION

The most suitable time to carry out renovation is during March-April-May. A heavy mat of kikuyu can be effectively handled if the area is burnt first in late summer, or very closely grazed in autumn, following early rains, and after its growth has been retarded by the first frosts. Without removal of some top growth it is difficult to renovate at sufficient depth to satisfactorily aerate the underlying soil.



The introduction into the sward of clover and grass seeds is best carried out at this time in conjunction with the annual fertilizer top dressing.

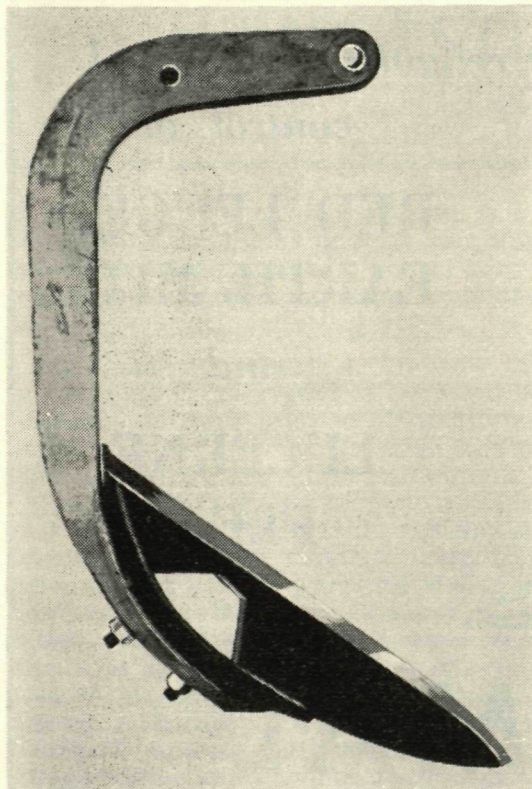


Fig. 2

### OBSERVATIONS

The effectiveness of the renovation has been observed on paddocks which were treated during the autumn of 1958 and apart from an increase in vigour in the

kikuyu a marked advantage has been seen in the increase in the proportion of other species of grasses and clovers (without reseeding) which are able to grow in association with the kikuyu. The most important of these is subterranean clover which forms a very valuable association until the mat of grass becomes too dense.

The use of these points seems to offer an excellent means of sowing clover and ryegrass seeds into the sward in such a way that they have a chance of survival, as sowing direct on to a dense mat of kikuyu is completely ineffective. A seed and fertilizer attachment to the implement would increase its usefulness considerably in this respect.

The Department has always advocated that maximum productivity could only be obtained from a kikuyu or paspalum pasture so long as the sward is prevented from becoming dense, root-bound and spongy. In order to prevent this condition it is necessary to commence renovation at an early stage, and it should be continued as often as is necessary to ensure aeration of the underlying soil, and to keep the sward open. These points seem to offer the best method to date of carrying out this work.

Acknowledgement is made of the information freely given by Mr. T. George who developed these points and for assistance given by the Witchcliffe-Forest Grove Pasture Improvement Group during early trials and discussions.

The following farmers also assisted with information regarding results obtained after renovation with these points under various conditions:— Mr. E. Noakes (Witchcliffe), Mr. E. Blain (Witchcliffe), Mr. R. Gale (Warner Glen).

### FREE SERVICE TO FARMERS

Do you know that the Department of Agriculture provides a comprehensive service of advice and technical assistance to farmers, free of charge?

When in need of advice, get in touch with your District Officer whose name and headquarters township will be found in the list of Departmental personnel on Pages 258 and 259.

These officers are there to help you and will make personal visits to your property to assist with on-the-spot advice. In addition, they will, where necessary, arrange for the services of specialist officers—all without cost to you.



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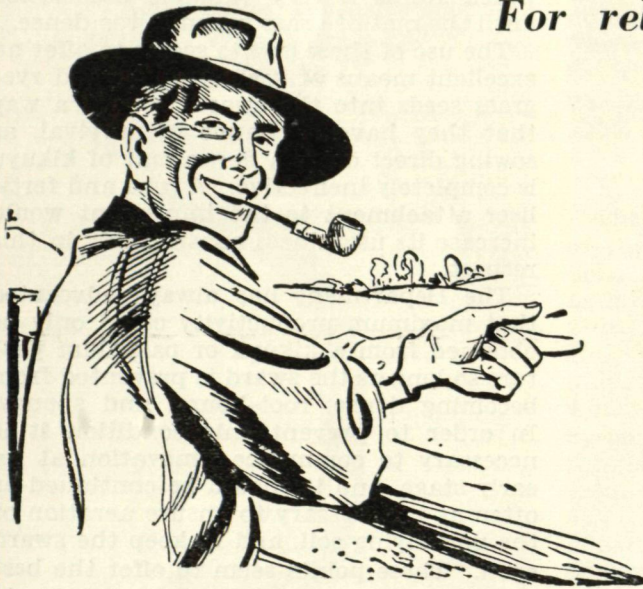
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